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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,102	08/10/2001	Michael Weber-Grabau	SEN-002	3815

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STALLMAN & POLLOCK LLP
SUITE 2200
353 SACRAMENTO STREET
SAN FRANCISCO, CA 94111

EXAMINER
ROSENBERGER, RICHARD A

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/927,102	WEBER-GRABAU ET AL.
	Examiner	Art Unit	
	Richard A. Rosenberger	2877	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 September 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>45-65</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>45-65</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 45-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato

et al (US 5,766,360) in view of Toprac et al (US 6,304,999) and the acknowledged prior

art of the instant specification.

As in the independent claims 45, 53 and 61, Sato et al shows a wafer processing

tool with a plurality of wafer processing "slots", or stations. There is a wafer inspection

station (58 in figure 2, for example), and a wafer handler (13 in figure 1, 30 in figure 2)

to transport the wafers being processed between the processing stations and to and from

the inspection station. There is a data processor to analyze the inspection data and

control the processing of the wafer based upon the data (see for example column 5, lines

6-10). Note in particular that the inspection station receives and inspects the wafers

both after the "pre-process chamber" (column 4, lines 1-4) and after the "thin film

growth chamber" (column 4, lines 28-33). Thus the inspection station in the Sato et al

reference does "analyze the wafer after processing in any of the processing stations".

Further, the system is "operable to alter the processing of the wafer in the wafer

processing tool based upon" the measurements (see column 4, lines 4-19 which

describes such alteration of the processing based upon the measurements).

Sato et al does not teach that the wafer inspection tool can be a scatterometry instrument. Scatterometry instruments are known, and it is known to use such scatterometry instruments in a wafer processing when such an instrument is appropriate for the particular inspections being made on the wafer; see Toprac et al (column 4, lines 11-12) and the instant specification, page 4, or example. Such scatterometry is known to use "characteristic optical signatures" in the processing; see the instant specification, the sentence bridging pages 10 and 11, which treats such use of signatures as known in the art, treating the techniques of obtaining and using these signatures as so well known no disclosure of to obtain and use them as so well known no particular disclosure beyond mere mention is needed.

Given the known use of a single inspection station to serve a plurality of processing stations, as shown by Sato et al, and the general known use of scatterometry to inspect and control processing (as shown by Toprac et al and in the instant specification), it would have been obvious to use such scatterometry-based inspection and control in conjunction with a plurality of processing stations in a cluster tool of the like in order to obtain the benefits of automatic inspection and control after each processing step without having to remove the wafers form the processing tool.

As in claims 46, 54, and 62, Sato teaches sending the wafer for further processing in one of the processing stations which has already processed the wafer (column 4, lines 10-14).

As in claims 47, 55 and 63, it is known in the art to use feedforward techniques to adjust processing tools (Toprac et al, column 4, lines 22-28).

As for claims 48, 56 and 64, the disclosed manner in which the inspection station of Sato et al decides to return the wafer to the "pre-process chamber" of send it on to the "thin film growth chamber" is a manner of "changing the order in which the wafer visits the plurality of wafer processing slots". Given this general teaching of using the inspection data to control the processing of the wafer including which processing station, or "slot", it is sent to, it would have been obvious to use any other type test in combination with any other type of processing with similar control as appropriate for the particular processing being done.

As for claims 49-52, 57-60 and 65, the claimed us of a model, and manners of carrying out scatterometry, appears to be, and appears to be intended to be, statements of known manners of carrying out scatterometry.

3.   Sun (US 5,940,175), already of record, specifically discusses the benefits of having an inspection station incorporated into a cluster tool (column 5, lines 30-42). Note that Sun uses an inspection tool that, like scatterometry, detects scattered light and uses it for the inspection.
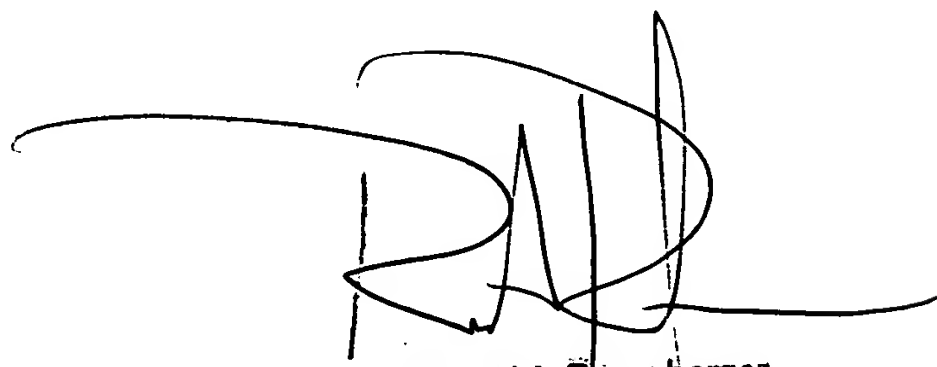
Kinney et al (US 5,909,276) and Rosengaus et al (US 6,791,680) show inspection stations incorporated into wafer processing tools. Note Kinney et al, column 11, lines 33-41 discusses the use of the inspection data to change the order the wafer is sent to various processing stations. Note also column 16, lines 46-47 of Rosengaus et al, which discloses the incorporated inspection station "facilitates monitoring of the performance of one or more process tools"; the "or more" at least clearly suggests the use of the inspection station after a plurality of the processing tools.

4.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A Rosenberger whose telephone number is (571) 272-2428. The examiner can normally be reached on Monday through Friday during the hours of 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. A. Rosenberger
2 November 2005

Richard A. Rosenberger
Primary Examiner